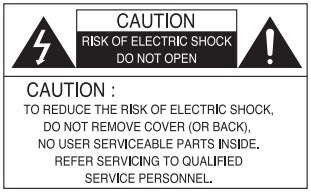

The lightning flash with an arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION - This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules & CE Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING - Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

CAUTION : To prevent electric shock and risk of fire hazards:

- ◆ Do NOT use power sources other than those specified.
- ◆ Do NOT expose this appliance to rain or moisture.

This installation should be made by a qualified service person and should conform to all local codes.

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■ Features

Fine Picture in Ultra Low Illumination.

1/2 inch CCD allows bright and high quality images to be captured in ultra low light condition.

- Colour : 0.08Lux / F1.2
- B/W : 0.01Lux / F1.2
- Sens up : 0.001Lux / F1.2

Ultra High Resolution

By adopting a 410,000 pixel Sony CCD, the camera produces clear picture quality with a horizontal resolution of 540 TV lines for colour, and 570 TV lines for B/W.

Filter Changeable Day & Night

This camera has a function that automatically selects the mode that is appropriate for daytime or night-time conditions. The COLOUR mode operates in daytime conditions to provide optimum colours, and BW mode operates in nighttime conditions to enhance the definition of the image.

Electronic IRIS

The electronic IRIS function enables continuous automatic control of the shutter between 1/60(1/50)~1/120,000 seconds.

Privacy Function

The PRIVACY function conceals the areas you do not wish to appear on the screen.

DNR (Digital Noise Reduction)

The amount of low illuminance noise has been significantly reduced, and the signal-to-noise ratio (S/N ratio) as well as horizontal resolution have been improved, resulting in a clear and sharp image display even in the dark.

Controlled by OSD Menu

The camera can be controlled by selecting text displayed on the monitor screen.

Additional Functions

SENS-UP, MOTION DETECTION, MIRROR, SHARPNESS and SYNC (INT/AUTO) functions are also available.

RS-485 Communication Control Support

Remote OSD menu control via an RS-485 interface is supported.

Warning ■

The camera requires periodic inspection.

Contact an authorised technician to carry out the inspection.

Stop using your camera when you find it malfunctioning.

If the camera emits smoke or is unusually hot for a long period, a fire may be caused.

Do not Install the camera on a surface that can not support it.

If the camera is installed on an inappropriate surface, it may fall and cause injury.

Do not hold plug with wet hands.

It could cause an electric shock.

Do not dis-assemble the camera.

It may result in an electric shock or other hazards.

Do not use the camera close to a gas or oil leak.

It may result in a fire or other hazards.

■ Precautions

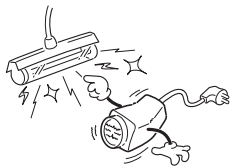
Do not install the camera in extreme temperature conditions.

Only use the camera under conditions where temperatures are between -10˚C and +50˚C. Be especially careful to provide ventilation when operating under high temperatures.

Do not install or use the camera in an environment where the humidity is high.

It can cause the image quality to be poor.

Do not install the camera under unstable lighting conditions.



Severe lighting change or flicker can cause the camera to work improperly.

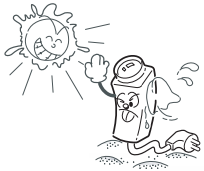
Do not touch the front lens of the camera.

This is one of the most important parts of the camera. Be careful not to leave fingerprints on the lens cover.

Do not drop the camera and protect it from physical shocks.

It can cause malfunctions to occur.

Never keep the camera pointed directly at strong light.



It can damage the CCD.

Do not expose the camera to rain or spill beverage on it.

If it gets wet, wipe it dry immediately. Liquids can contain minerals that corrode the electronic components.

Do not expose the camera to radioactivity.

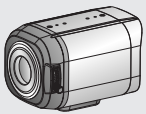
If exposed to radioactivity the CCD will fail.

Note

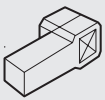
- If the camera is exposed to spotlight or an object reflecting strong light, smear or blooming may occur.
- Please check the power supply satisfies the normal specification before connecting the camera.

■ Components and Accessories

1. Day&Night CCD Camera



2. Auto Iris Lens Connector Plug

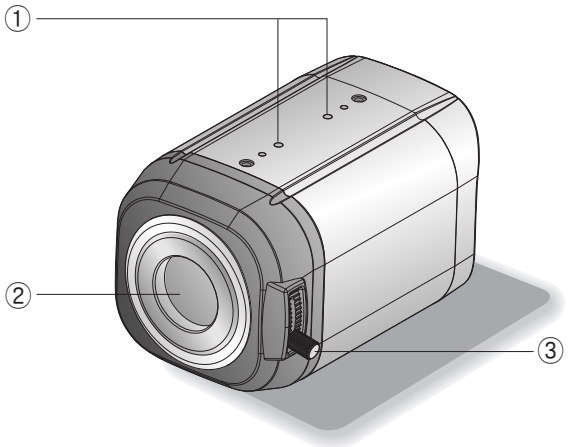


3. C-Mount Adapter

4. Instruction Manual

Overview ■

Front View



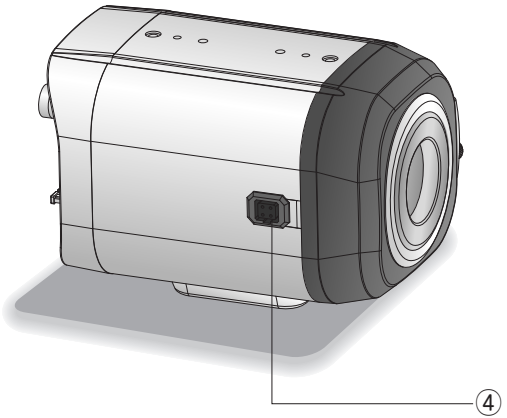
① **Tripod Mounting Bracket Screw Hole**
Used to fix the Tripod Mounting Bracket to the top of the camera.

② **C-Mount Lens Adapter**
Install this adapter to use a C-Mount Lens.

③ **Back Focus Control Lever**
Adjust Back Focus using this control lever.

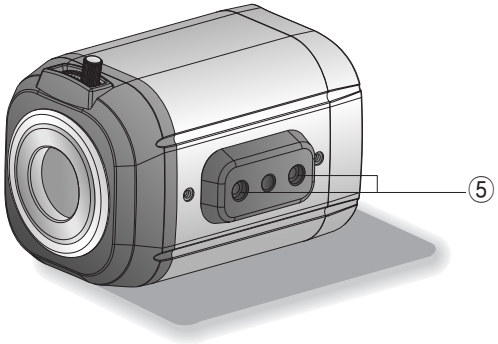
■ Overview

Side View

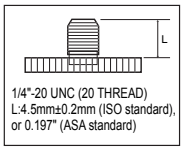


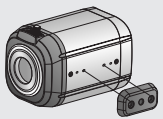
④ **Auto Iris Lens Connector**
Used to connect Auto Iris Lens plug.

Bottom View



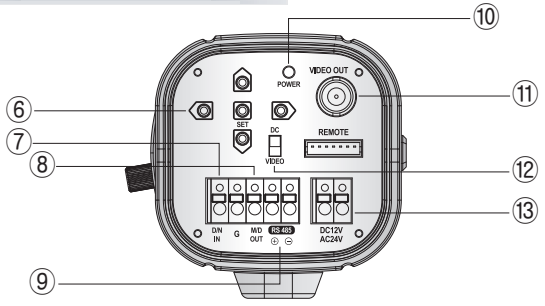
⑤ **Tripod Mounting Bracket Screw Hole**
Used to fix the camera onto a bracket or tripod.
The screw sizes for this hole are as follows:





The Tripod Mounting Bracket can be unscrewed and installed on the top or bottom of the camera.
Make sure to use the Tripod Mounting Bracket when fixing the camera to a bracket or tripod, otherwise the camera may be unstable and the internal circuitry of the camera may get damaged.

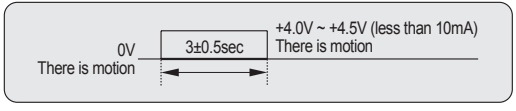
Rear View



⑥ OSD Setup Buttons
- SET Button : Displays the menu on the screen. Press this button to confirm status or after changing a selected item.
- Up and Down Button : Used to move the cursor up or down in the menu screen to select a desired menu item.
- Left and Right Button : Used to move the cursor left or right in the menu screen or to change the value of the selected item.

⑦ D & N Input Port (GND : Colour, Open : B/W)
Switch to Day or Night Mode by connecting an external signal to this port.

⑧ MD Output Port
Motion detection signal is output through this port.



⑨ RS-485 Control Port
The SETUP MENU can be controlled via this port using an external controller that supports RS-485 communications. For details, see page 19.

⑩ Power LED
When power is properly connected, the LED illuminates.

⑪ Video OUT Port
Video signals are output through this port. Connect this port to the Video IN port of a Monitor/DVR.

⑫ Auto iris lens selection switch
Used to change between DC or Video depending upon the type of auto iris in use.

⑬ Power IN Port
Connections for Camera power, as specified for each model.

Lens

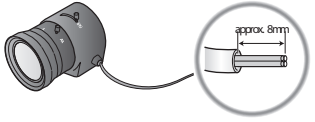
The lens is not supplied with this camera. Purchase a lens suitable for the environment. This camera accepts an auto iris lens, and both C-and CS-mount lenses.

Note

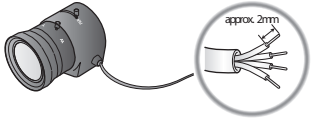
- It is recommended to use the DC type Auto Iris Lens to effectively enjoy the major functions of this camera.
- Keep the lens surface clean, as the picture quality suffers if there is dirt or fingerprints on the Lens.

Using an Auto Iris Lens

1. Strip 8mm of insulation from the end of the Auto Iris Lens cable..



2. Strip 2mm of insulation from each of the cores of the cable.

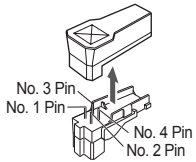


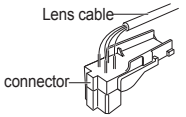
■ Installation Procedures

3. Remove the cover of the Auto Iris Lens connector plug and solder the lens cable to the connector pins of the plug.

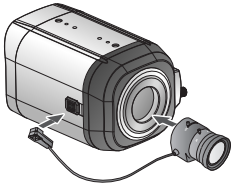
- **For a Video Drive Lens**
  Pin 1: Red (Power)
  Pin 2: NC
  Pin 3: White (Video Signal)
  Pin 4: Black (Ground)

- **For a DC Drive Lens**
  Pin 1: Damping -
  Pin 2: Damping +
  Pin 3: Drive +
  Pin 4: Drive -

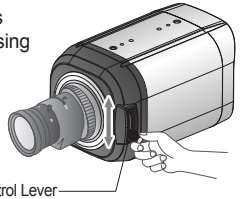




4. Fit the cover of the auto iris lens connector plug, remove the protective CCD cover from the front of the camera, and fasten the Auto Iris Lens by turning it clockwise.



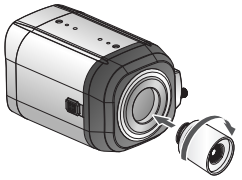
5. Focus the camera using the Auto Iris Lens controls, combined with fine adjustment using using the Back Focus control.



Using a C/CS mount Lens

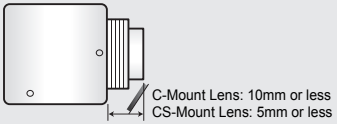
Before installing a lens, identify whether the lens to be installed is a C-Mount or CS-Mount. This camera is set for a CS-Mount Lens by default. To install a C-Mount Lens, a simple modification is required.

- When Using a CS Mount Lens
  Remove the protective cover from the front of this product and turn the CS-Mount Lens clockwise to install it. Focus the camera using the CS-Mount Lens and Back Focus controls.



Note

- Use a lens threaded as shown in the following figure. If the dimensions of the thread are incorrect the camera could be damaged, or the lens may not get installed firmly enough.

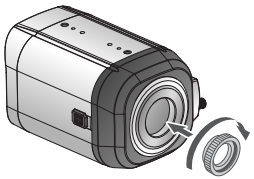


- If the lens is too heavy the camera becomes unbalanced, which may cause problems. Use a lens weighing less than 450g.
- When adjusting the Automatic Level Control (ALC) of an Auto Iris Lens, use Av mode if available. If Pk mode is used the picture brightness may change continuously.

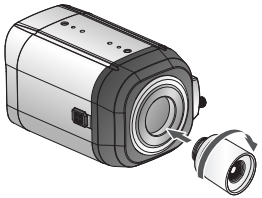
■ Installation Procedures

• Using a C-Mount Lens

1. Remove the protective cover at the front of this product and fit the C-Mount Adapter, turn it clockwise to install it.



2. Turn the C-Mount Lens clockwise to install it.

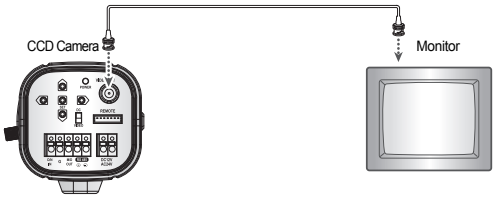


3. Focus the camera using the C-Mount Lens and Back Focus controls.

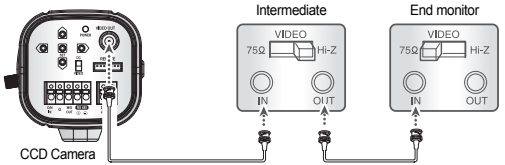
4. Set the lens selection switch, located on the rear of the camera, to either DC or VIDEO depending on the type of auto iris lens being used.

Connecting to a Monitor

Connect the video output terminal located on the rear of the camera to the Monitor/DVR.



- Since the connection procedure may differ depending on the type of monitor or peripheral device to be connected, refer to the User Manual for the device to be connected.
- Make sure to turn off the device to be connected before making any connections.
- Turn the 75Ω/Hi-Z switches of interim display devices to the Hi-Z position, and the switches of any final device to the 75Ω position.



■ Installation Procedures

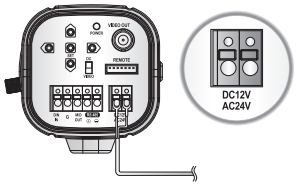
Connecting to Power

Since power specifications differ depending on the model, make sure to check your model name and specifications before connecting power.
You can connect power as shown in the following figure.

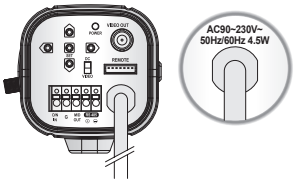
For AC / DC power

• Check the standard power requirement before connecting to power.

Dual Power Type
(AC 24V/DC 12V, AC 24V Class2)
DC Power Type (DC 12V, 500mA)



AC90~230V-50Hz/60Hz 4.5W



When the resistance value of copper wire is at [20˚C(68˚F)]

Copper wire size(AWG)	#24(0.22mm²)	#22(0.33mm²)	#20(0.52mm²)	#18(0.83mm²)
Resistance value(/m)	0.078	0.050	0.030	0.018
Voltage drop(V/m)	0.028	0.018	0.011	0.006

• As shown in the table above, voltage decreases as the wire gets longer. Therefore use of an excessively long adaptor output line for connection to the camera may affect the performance of the camera.

※Standard voltage for camera operation : DC 12V±10%, AC 24V±10%

※There may be some deviation in voltage drop depending on the type of wire and the manufacturer.

Control via the RS-485 Interface

The camera can be controlled by using an external controller equipped with RS-485 communications.

• To control using a DVR or keyboard controller
Connect the RS-485 cable (TRX+, TRX-) to the connection port of the 485 control board in the DVR or controller.

485 Control Board Connection Port	RS-485 Control Port
(+) CONNECTION TERMINAL (TRX+)	485+
(-) CONNECTION TERMINAL (TRX-)	485-

* RS-485 communication default initial values

Item	Camera ID	BAUD RATE	UART MODE	PET PKT
Initial value	1	9600	8-NONE-1	ENABLE

Note

• To control the camera use Pelco-D protocol.
(Go Preset 95 : Enters into OSD menu or Set key function)

■ MENU

MAIN MENU	
EXPOSURE	· LENS · BRIGHTNESS · BACKLIGHT · SHUTTER · AGC · SENSE UP · ECLIPSE · DNR
WHITE BAL	· WB MODE · RED CONT · BLUE CONT · PUSH AUTO
DAY / NIGHT	· D/N MODE · FILTER DLY
MOTION	· DETECT MODE · DETECT AREA · SENSITIVITY · ALARM TIME
PRIVACY	· AREA · MASK · LEVEL · TOP · DOWN · LEFT · RIGHT
OPTION	· TITLE · NEGA/POSI · SHARPNESS · MIRROR · ZOOM · PAN/TILT · PHASE
DISPLAY	· TITLE · MOTION DET · CAMERA ID · BAUD RATE
SYNC	· INT · AUTO
INITIAL	
EXIT	

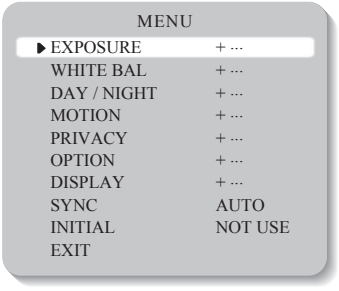
■ SWITCH

[SET] : ON or OFF of OSD MENU
※It becomes a decision at the title screen.

[UP] / [DOWN] : UP or DOWN of Cursor

[LEFT] / [RIGHT] : SUB MENU ON or Decision
※When OSD MENU is OFF and PAN/TILT is ON, operate by **[UP]**, **[DOWN]**, **[LEFT]**, **[RIGHT]**.
MOTION DETECT becomes invalid while moving PAN/TILT.

■ MAIN MENU



· EXPOSURE, WHITE BAL, DAY/NIGHT, MOTION, PRIVACY, OPTION and DISPLAY has a SUB MENU.
[UP] / [DOWN] of Cursor. And SUB MENU is displayed by [LEFT] /[RIGHT]

· SYNC : AUTO or INT can be selected.

· When making INITIAL from USE to NOT USE, all data is initialized.
※It doesn't operate at NOT USE.

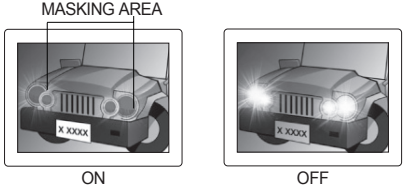
· EXIT is non-displayed by [LEFT] / [RIGHT].

■ Camera Operation

EXPOSURE

EXPOSURE	
▶ LENS	DC
BRIGHTNESS	32
BACKLIGHT	OFF
SHUTTER	NOT USE
AGC	MID
SENSE UP	X2
ECLIPSE	OFF
DNR	ON
RETURN	

- **LENS** : ELC or DC/VIDEO can be selected.
- **BRIGHTNESS** : 0 to 60 can be selected.
- **BACKLIGHT** : OFF or ON can be selected.
- **SHUTTER** : 1/60(NT), FLC, 1/250,500,1000,2000,4000,10000 can be selected.
  ※When LENS is DC, it is possible to select it. Another becomes NOT USE.
  It becomes 1/60 at NTSC. It becomes 1/50 at PAL.
- **AGC** : AGC OFF, LOW, MID, HIGH can be selected.
- **SENSE UP** : OFF, x2, x4, x8, x16, x32 can be selected.
- **ECLIPSE** : If there is a high light installed in a limited environment such as an apartment parking garage or gas station entrance, removing the high light makes it possible to view car license plates efficiently.
  - DAY : In normal daylight conditions, the HLC is not activated.
  - NIGHT : If a high light that is larger than a certain size is present on the screen, remove the high light to see license plates clearly.



ON OFF

- **DNR** : This function reduces the background noise in a low luminance environment.
  - OFF : Deactivates DNR. Noise is not reduced.
  - ON : Activates DNR so that noise is reduced.
- **RETURN** : It returns to the MAIN MENU.

WHITE BALANCE

WHITE BAL	
▶ WB MODE	ATW
RED CONT	NOT USE
BLUE CONT	NOT USE
PUSH AUTO	NOT USE
RETURN	

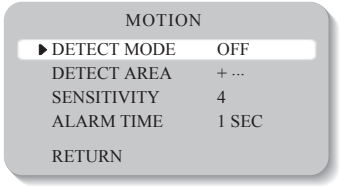
- **WB MODE** : ATW, AWC, MANUAL can be selected.
- **RED CONT** : When it is MANUAL, 0 to 127 can be selected. Another becomes NOT USE.
- **BLUE CONT** : When it is MANUAL, 0 to 127 can be selected. Another becomes NOT USE.
- **PUSH AUTO** : When it is AWC, OFF to PUSH can be selected. Another becomes NOT USE.
- **RETURN** : It returns to the MAIN MENU.

DAY / NIGHT

DAY / NIGHT	
▶ D/N MODE	AUTO
FILTER DLY	5 SEC
RETURN	

- **D/N MODE** : AUTO, DAY, NIGHT, EXT can be selected.
- **FILTER DLY** : When it is AUTO, 4 to 10 can be selected. When AGC is OFF, NOT USE. Another becomes NOT USE.
- **RETURN** : It returns to the MAIN MENU.

MOTION



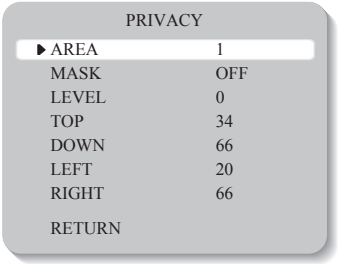
- **DETECT MODE**: OFF or ON can be selected.
  ※Turning on becomes invalid while displaying OSD.
  However, it becomes effective only at MOTION AREA.
- **DETECT AREA**: MOTION AREA is displayed.
- **SENSITIVITY**: 0 to 8 can be selected.
- **ALARM TIME** : 1 to 60 can be selected.
- **RETURN** : It returns to the MAIN MENU.

■ MOTION AREA

↑cursor	↑invalidity	↑effective					

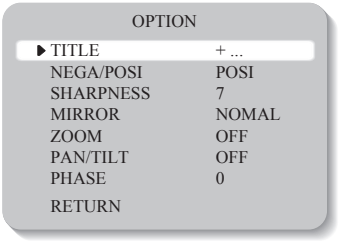
- A thick gray shows the cursor.
- When it is transparent, the area becomes effective.
  ※Default is ALL transparent, it is ALL effective.
- When it is light gray, the area becomes invalidity.
- Cursor moved by [LEFT] or [RIGHT].
- When [UP] or [DOWN] is pushed, it becomes effective or invalid.
- [MENU] is returns to the MOTION.
  ※BLC automatically becomes effective on this screen.

PRIVACY



- **AREA** : 1 to 4 can be selected.
- **MASK** : OFF or ON can be selected.
- **LEVEL** : When MASK is ON, 0 to 15 can be selected.
  ※It set the same value regardless of a set value of AREA.
- **TOP** : When MASK is ON, 3 to 124(NTSC) or 6 to 150(PAL) can be selected.
- **DOWN** : When MASK is ON, 5 to 126(NTSC) or 8 to 152(PAL) can be selected.
- **LEFT** : When MASK is ON, 0 to 187(NTSC) or 0 to 185(PAL) can be selected.
- **RIGHT** : When MASK is ON, 2 to 189(NTSC) or 2 to 187(PAL) can be selected.
- **RETURN** : It returns to the MAIN MENU.

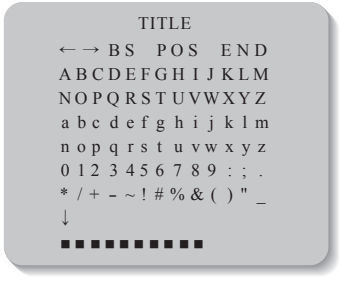
OPTION



■ Camera Operation

- **TITLE** : TITLE is displayed.
- **NEGA/POSI** : NEGA or POSI can be selected.
- **SHARPNESS** : 0 to 15 can be selected.
- **MIRROR** : NORMAL, MIRROR, VERTICAL, ROTATE can be selected.
- **ZOOM** : 0FF(x1) and ON1 to ON8(x4) can be selected.
  When PAN/TILT is ON, it is NOT USE.
- **PAN/TILT** : OFF or ON(x2) can be selected.
  ※When OSD MENU is OFF and PAN/TILT is ON, operate by [UP], [DOWN], [LEFT], [RIGHT].
- **PHASE** : You can select a desired phase between 0 and 524 when the SYNC. menu is fixed to the 'AUTO' mode.
- **RETURN** : It returns to the MAIN MENU.

■ TITLE

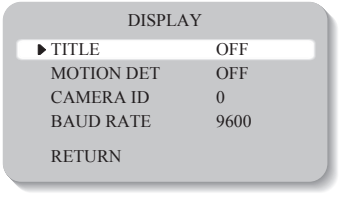


- It moves by [UP], [DOWN], [LEFT] and [RIGHT].
- Character is setting by [MENU]. The character from 1 to 10 can be set.
- When [MENU] is pushed by(→/←), can move between the set characters.
- When [MENU] is pushed by "BS", one character can be deleted.
- When [MENU] is pushed by "POS", POSITION is displayed.
  ※Only when you set the character by one character or more.
- When [MENU] is pushed by "END", return to the OPTION.
- "■" is brank.
- "_" is space.

■ POSITION

- TITLE position is changed by [UP], [DOWN], [LEFT], [RIGHT].
- [MENU] is returns to the TITLE.

DISPLAY



- **TITLE** : OFF or ON can be selected.
- **MOTION DET** : OFF or ON can be selected.
- **CAMERA ID** : Determines the camera's identification number. (between 0 and 255)
- **BAUD RATE** : You can select 2400/9600 bps.
- **RETURN** : It returns to the MAIN MENU.

■ Camera Operation

SYNC

Two sychronisation modes are available, INTERNAL and AUTO.
In AUTO mode, it synchronises the video signal between cameras without a synchronous generator. The line-lock synchronisation is only used in areas of 60Hz (NTSC Models) / 50Hz (PAL Models).

- **INT** : Internal synchronisation
- **AUTO** : External line-lock synchronisation

INITIAL

Returns to the level which was set by the manufacturer for shipment.

EXIT

Saves all the setting menus and then exits.

Troubleshooting ■

If there are problems with the camera operation, check the tables below. If the problem persists, please contact the agent who supplied the product.

Problems	Troubleshooting
Nothing appears on the screen.	· Check the power connection. · Check the video signal line connection.
The video image is not clear.	· Make sure that the lens is clean. Clean the lens with a clean lint free cloth or brush. · Adjust the contrast control on the monitor. · Make sure that the screen is not exposed directly to a bright light. Re-position the camera if necessary.
The screen is dark.	· Adjust the contrast control of the monitor. · If there is an intermediate device, set the75ohm Hi-z correctly, and also check the connections. · If necessary, adjust the brightness level.
There is a problem with the camera operation. The camera surface is too hot and black stripes appear on the screen.	· Check if an appropriate power source to the camera complies with the manufacturer's standard requirement, or if the voltage is fluctuating. Check for ground loops.

■ Troubleshooting

Problems	Troubleshooting
The MOTION DETECTION function is not working.	· Check if 'MOTION DETECTION' mode is turned on. · Check the setting of the MD AREA.
Colours are not quite right.	· Check the 'WHITE BAL' setting. (Please refer to page 23)
The screen is flickering.	· Check if the camera is facing directly into sunlight or fluorescent light.
L/L mode isn't able to be selected.	· Have you connected your camera to DC power source? Connect it to AC power source.
L/L mode is not available.	· Check the frequency of power supply (60Hz for NTSC, 50Hz for PAL).
COLOUR mode is not working.	· Check if the AGC menu is set to the OFF position.
SENSE-UP function is not working.	· Check if the AGC menu is set to the OFF position. · Check if the SHUTTER menu is set to MANUAL mode.

Specification (AC24V / DC12V) ■

ITEM	NTSC	PAL
Sensor	1/2" Ex-view colour CCD	
	ICX 428AKL	ICX 429AKL
Number of Pixel	768 X 494	752 X 582
Scanning	2:1 Interlace	
Synchronize	Internal	
Horizontal frequency	15.734kHz	15.625kHz
Vertical frequency	59.94Hz	50.00kHz
Resolution	Colour : 540 TV Lines	B/W : 570 TV Lines
Video out Level	1.0Vp-p/75Ω Video 0.714Vp-p Sync 0.286Vp-p	
Burst Level	0.286Vp-p	
S/N	50dB Min. (AGC Correct Off)	
Sensitivity	0.08Lux (Colour), 0.01Lux (B/W), 0.001Lux (Sens-up) / F1.2	
Sense UP	Max 32 times	
Correction	0.45	
AGC	+18dB Max.	
IRIS Control	Electrical IRIS / Lens IRIS (DC Lens)	
Electrical Shutter	1/60 (1/50) ~ 1/120,000sec.	
Power Supply Voltage	AC24V / DC12V (+10%, -20%)	
Power Supply Current	AC24V / DC12V (Max.350mA / Max.490mA)	
Operating Temperature	-10˚C ~ 50˚C	
Operating Humidity	90% RH max.	
Weight	320g	

■ Specifications (AC230V)

ITEM	NTSC	PAL
Sensor	1/2" Ex-view colour CCD	
	ICX 428AKL	ICX 429AKL
Number of Pixel	768 X 494	752 X 582
Scanning	2:1 Interlace	
Synchronize	Internal	
Horizontal frequency	15.734kHz	15.625kHz
Vertical frequency	59.94Hz	50.00kHz
Resolution	Colour : 540 TV Lines	B/W : 570 TV Lines
Video out Level	1.0Vp-p/75Ω Video 0.714Vp-p Sync 0.286Vp-p	
Burst Level	0.286Vp-p	
S/N	50dB Min. (AGC Correct Off)	
Sensitivity	0.08Lux (Colour), 0.01Lux (B/W), 0.001Lux (Sens-up) / F1.2	
Sense UP	Max 32 times	
γCorrection	0.45	
AGC	+18dB Max.	
IRIS Control	Electrical IRIS / Lens IRIS (DC Lens)	
Electrical Shutter	1/60 (1/50) ~ 1/120,000sec.	
Power Supply Voltage	AC230V	
Power Supply Current	MAX. 4.5W	
Operating Temperature	-10˚C ~ 50˚C	
Operating Humidity	90% RH max.	
Weight	320g	

Genie CCTV

Model : DN5241

1/2" Ultra Low Light High Resolution Camera

Instruction Guide

Genie CCTV

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